**CHAPTER 1**

Long-Term Forecasts of Washington Population and Net Migration

T HE POPULATION PROJECTION is an integrated part of the long-term forecast for Washington labor force, employment, and income. Population growth contributes to economic growth in the state by making available the labor needed for production, and by expanding the demand for goods and services.

Long-term population growth results from the combined effects of two sources of population change: natural increase and net migration. Natural increase is the excess of births over deaths, and net migration is the difference between in-migration and out-migration.

Figure 1-1
Components of Population Change: Washington
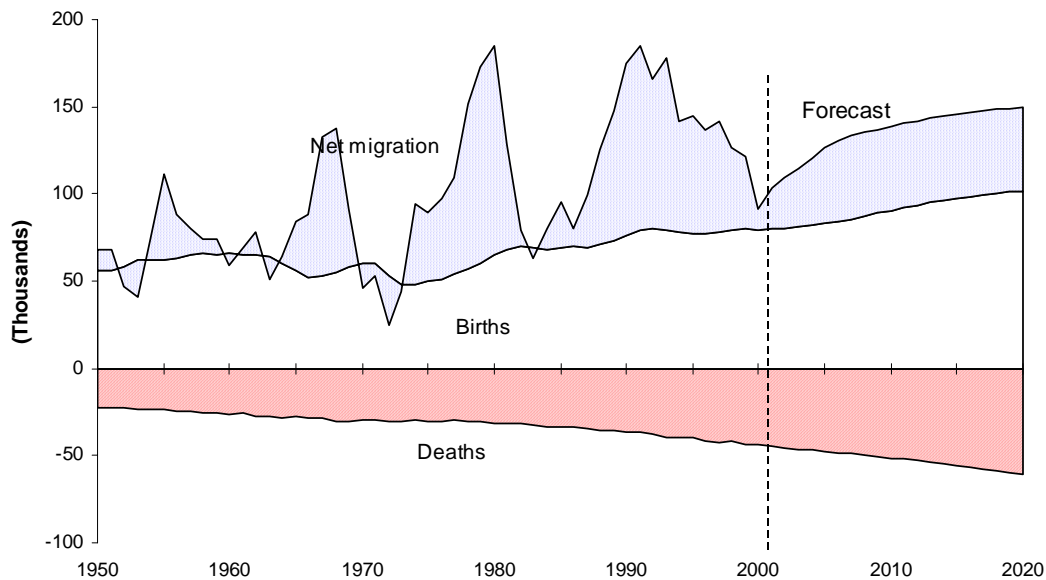
Between 1970 and 2000, population in Washington grew 73 percent from 3.4 to 5.9 million, averaging 1.8 percent per year. However, the year-to-year changes fluctuated widely, ranging from a high of 3.8 percent in the 1979-80 period to the 1971-72 low of negative 0.2 percent. Net migration, which responds to changing economic conditions, accounted for most of the ups and downs in the yearly state population figures (Figure 1-1). Change in the number of births over time depends on the growth, age structure, and fertility rate of the population. The long-term trend of births in Washington reflects long, generational waves of socioeconomic change

including the Great Depression, the post World War II baby boom, the baby bust of the 1970s, and the baby boom echo of the 1980s.

Washington population grew steadily in the second half of the 1980s and peaked in 1990. Between 1990 and 1993, the state population growth remained high at a 2.8 percent annual rate. In the rest of the decade, however, the state population growth slowed to 1.6 percent per year. By 2000, about 5.9 million people lived in Washington State. Over the next 20 years, the state population is expected to grow at an annual rate of 1.3 percent (Figure 1-2), reaching a total of 7.6 million by the year 2020. Net migration will continue to play a major role in the state population growth.

Figure 1-2
Population Growth: Washington, 1970-2020
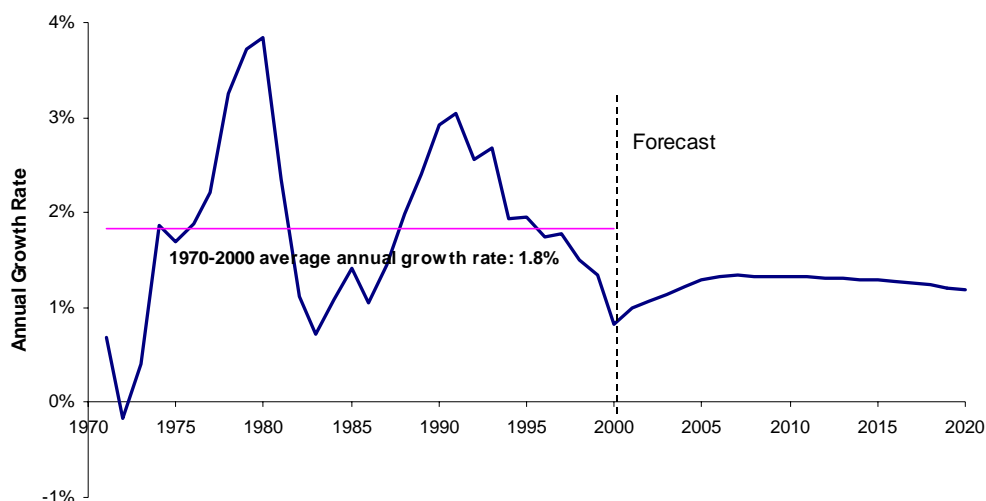
Net Migration

People move into or out of Washington for a variety of reasons. Non-economic factors such as movements of military personnel, retirement migration (principally persons over age 65), and pursuing social and natural amenities account for a small portion of net migration. The majority of interstate population movements are due to relative changes in the labor market and economic conditions among the states. An expanding economy and labor market tends to "pull" people into an area. Conversely, a contracting economy and labor market tends to "push" people out of it. Net migration is the difference between out-migration and in-migration. These "push" and "pull" factors have made net migration the major contributor to population change in Washington.

The effects of the "push" and "pull" factors are evident in the historical net migration pattern for Washington State. For example, large population increases due to net migration occurred as a result of rapid economic expansions in Washington during the late 1970s and again in the late

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1980s. When the state economy slumped in 1970-73 and 1981-83, net migration dropped sharply; in several of those years there was actually negative net migration.

In the first half of the 1990s, the slowing of economic growth in the state lowered the level of net migration and thus restrained population growth, but not to the same extent as in the past. One major reason is that employment growth in Washington still remained in positive territory during the 1990-91 U.S. recession. This made Washington relatively attractive to those seeking jobs, compared to other states that were losing employment. The relative strength of the Washington economy compared to the rest of the U.S. helped "pull" more job seekers into the state. In addition, California, which experienced a steep decline in employment starting about the same time as the U.S. recession, remained in recession well into 1993. Even though Washington experienced a significant reduction in aerospace jobs beginning in 1991, the overall Washington economy continued to perform much better than the California economy. Between 1990 and 1994, California experienced net out-migration of over 400,000 persons per year. Washington received a significant amount of these Californian out-migrants. These two factors, among others, contributed to fairly high levels of net migration for Washington during the early 1990s, even when the state's economy slowed down significantly.

The picture, however, has reversed in the past five years. From 1995 to 2000, while state economic growth picked up pace, so did the U.S. and the Californian economies. As a result, the level of net migration dropped steadily (Figure 1-3).

Figure 1-3
Net Migration and Traded Sectors Employment Change
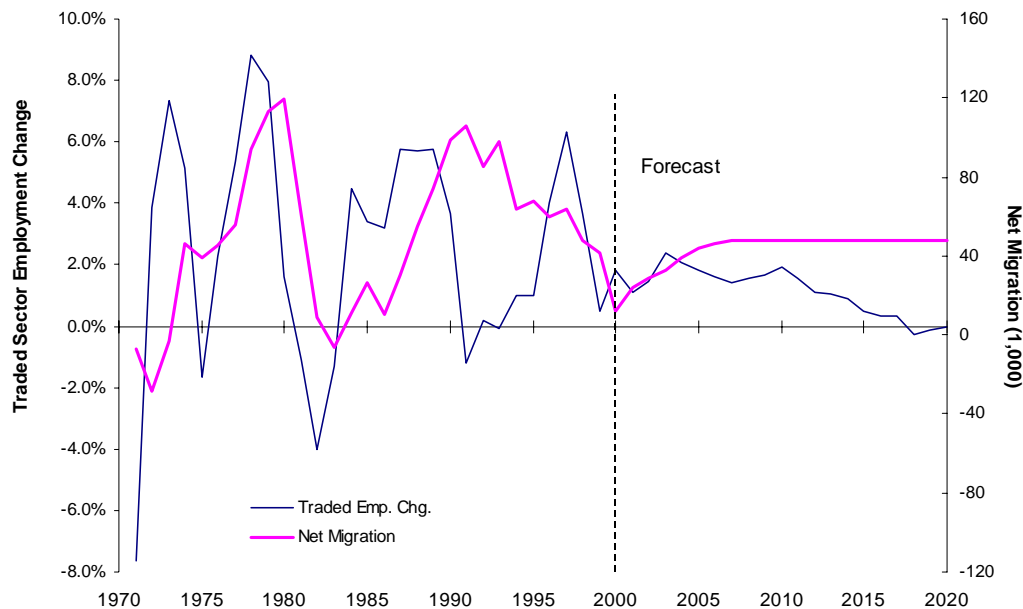
Change in "traded sector" employment has been the major determinant of the Washington net migration. The traded sectors of the state economy include manufacturing, civilian federal government, and producer services (services purchased by other businesses and government agencies). These industries are considered to be "traded" because the demand for their output exists mostly outside the state. For example, most of the aluminum produced in Washington is fabricated into consumer products by out-of-the-state businesses.

The traded industries usually demand special worker skills that cannot be promptly supplied from the local labor pool. Companies in the traded sectors thus constantly recruit workers, especially professionals, from the national labor market. During expansionary periods, new positions created in the state's traded industries very likely require specialized skills or experience that are in short supply among existing Washington worker pool. For example, to increase development and production to the desired levels, the Boeing Company may require as many as 3,000 additional aerospace engineers in a single year. If this amount of extra engineers is not readily available in the state, they will have to come from elsewhere in the country or even from overseas.

Traded sector jobs also tend to be high wage jobs, which is another incentive to attract workers from outside the state. High wages not only induce people to change jobs, they also help cover the costs of interstate relocation. Cost is a critical concern especially if in-migrating workers need to bring family members with them. In short, when Washington's traded sectors expand, net migration increases, and when these sectors decline net migration falls.

Net migration has a significant impact on the size of the state labor force. Since a majority of in-migration to Washington is associated with employment opportunities, these economic migrants tend to be active labor market participants for a long span of time, therefore contributing to the growth of the Washington labor force. Also, gross (i.e., in- plus out-) flow of migration is generally 5 to 10 times the magnitude of net migration; this is the reason why many public and private business operations (e.g., issuance of driver's license, rental housing, etc.) are strongly affected by the level of net migration.
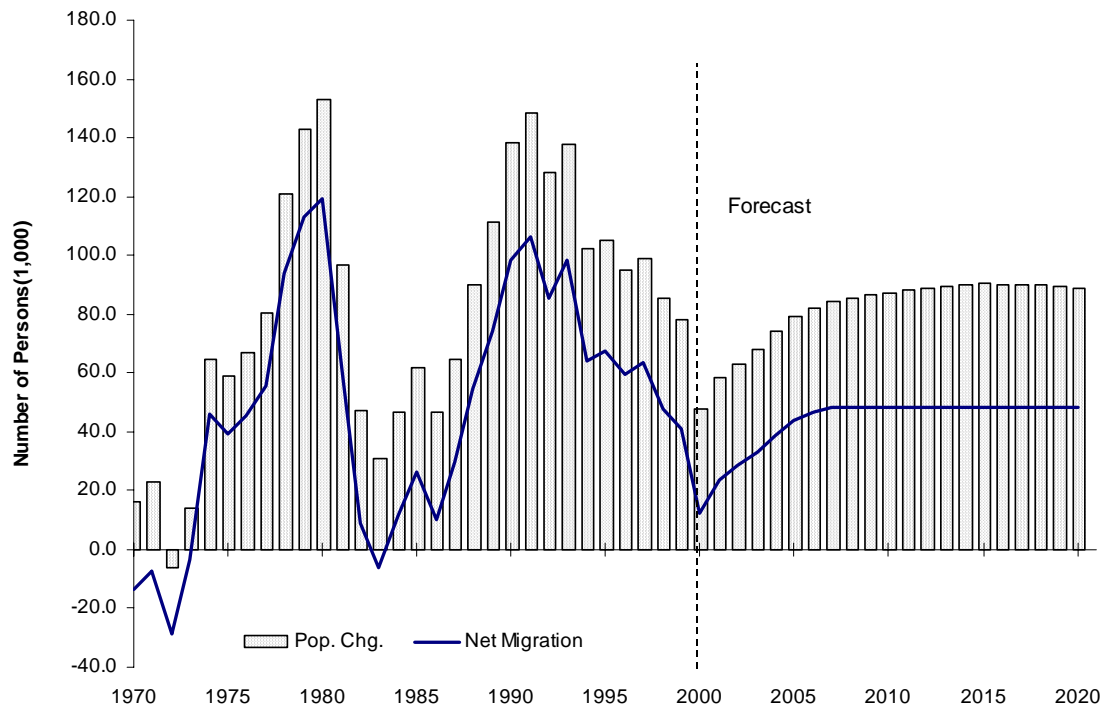
Forecast of Net Migration

The methodology used to forecast net migration includes two steps. First, the Office of Financial Management (OFM) and the Employment Security Department (ESD) jointly develop a forecast of employment for each of the traded sectors. This initial forecast is based on a system of equations determining employment in each of the 17 manufacturing sectors, the federal civilian sector, and the producer services sector. The producer services sector consists of business services, legal services, engineering, accounting, research, management, and related services.

Next, a single equation model is used which treats Washington net migration as a function of traded sector job growth within the state relative to economic conditions in the rest of the country and California. The specific factors included in the model to determine levels of Washington net migration are:

- **The percentage change in Washington's traded sector employment relative to the percentage change in traded sector employment in the U.S.** (The U.S. forecast is from Data Resources Incorporated [DRI] Summer 2000 long-term trend forecast.)

- **The percentage change in Washington's traded sector employment relative to the percentage change in traded sector employment in California.** (The California forecast was obtained from the DRI's Regional Services.)

- **The national unemployment rate.**

Net migration for Washington over the next 2 decades is predicted to maintain an average of about 44,400 persons per year, slightly below the historical average of 44,700 per year between 1970 and 2000. The level of net migration, however, varies over the forecast period. Net migration dipped to 12,200 in 1999-2000, and is predicted to gradually increase to 44,000 by the year 2005, and then settle on a stable, long-term level of around 48,100 per year through 2020. (Population statistics, including net migration, are shown in Table 1-1 at the end of this chapter.)

Figure 1-4
Net Migration and Population Change

The main reason that Washington's net migration is expected to sustain at the historical average is that Washington's traded sectors are expected to maintain healthier growth than their national

counterparts over the forecast period. For example, the forecast calls for manufacturing employment to grow modestly in Washington over the next 20 years, whereas manufacturing employment in the U.S. is projected to gradually decline.

The net migration forecast, once completed, is incorporated in the demographic model for the long-term projection of state total population.

Natural Increase

Natural increase is the second component of population growth. Natural changes include additions to the population through births, and reductions from the population due to deaths. The state's natural population increase is forecast to average 38,600 a year between 2000 and 2020.

The total fertility rate in Washington, which represents the estimated average number of births to women in their childbearing years, is expected to reach and remain at a replacement level of 2.1 births per woman through the end of the forecast period (Figure 1-5). This is somewhat above the all-time low of 1.6 births per woman in 1933, but far below the peak of 3.7 births per woman in 1957. The fertility rate is not expected to rise significantly, in part because of the increasing labor force participation rate for women of childbearing age. (See next chapter.) Also, compared to earlier generations, women are marrying later, having children later, are more likely to live independently, and are spending more time on education. These factors, in combination with technological advancements in birth control, tend to lower the fertility rate.

Figure 1-5
Births and the Total Fertility Rate: Washington
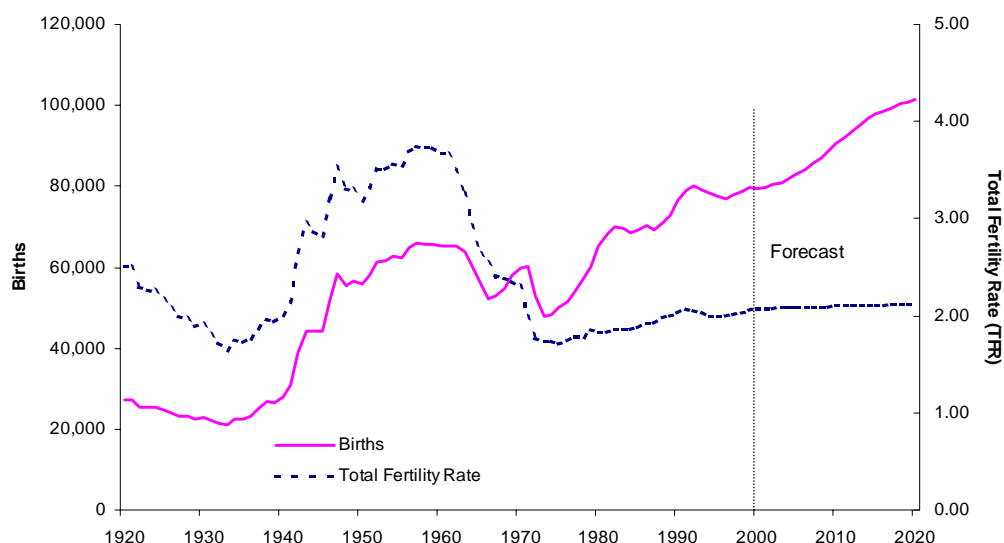
While the fertility rate is expected to remain fairly stable throughout the forecast period, the number of women of childbearing age is predicted to grow steadily. As a result, the annual number of births in Washington is expected to increase from 79,500 in 1999-2000 to about 101,500 in 2019-20.

By definition, the labor force includes only those age 16 and older. Births have a delayed effect on labor force growth, as individuals born today will be potential members of the labor force in 16 years. This implies that recent population changes due to births will affect the labor force in the latter years of the forecast period. In another word, anyone born in 1995 will be old enough to enter the labor force in 2011. Similarly, births over the past 16 years are closely associated with the labor force growth in the 2000-2016 period. Although the annual number of births in Washington during the early 1970s dropped to less than 50,000 for the first time in 25 years, the number of births rebounded to 70,100 in 1982. By 1990 the annual number of births in the state had increased to 76,400. As explained above, the increased births in the 1980s and 1990s will contribute to the growth of the state workforce over the next two decades.

Mortality, the other component of natural increase, will also rise throughout the forecast period. Life expectancy increased rapidly between 1920 and 1960 and continued to improve through the 1980s, albeit at a much slower pace. Since a lot of the improvements have been achieved in the prevention of infant deaths, future substantial improvement in life expectancy at birth is unlikely.

The forecast calls for both male and female life expectancy in Washington to continue to improve at a slow but steady rate. As in the nation as a whole, the state's population will be aging. Higher mortality rates associated with an aging population will more than offset the improving life expectancy, leading to rising aggregate death rates. The proportion of all deaths due to deaths in the elderly population will increase during the forecast period. This suggests that mortality will not have a major impact on labor force growth in the forecast period, because most of the deaths will occur at ages when individuals are unlikely to be in the labor force.

Over the next few decades, aging of the population, both in the state and throughout the nation, will be a profound demographic phenomenon. In Washington State, people 65 years of age and older will account for a growing share of population, from 11.3 percent in 2000 to 16.1 percent in 2020 (Figure 1-6). The trend will have widespread economic and public policy implications ranging from the expanding demand for personal and health services at the local level to increasing pressure on the federal Social Security and medical insurance programs.

Table 1-1 on page 11 shows the historical and projected Washington population trend, and the components of population change.
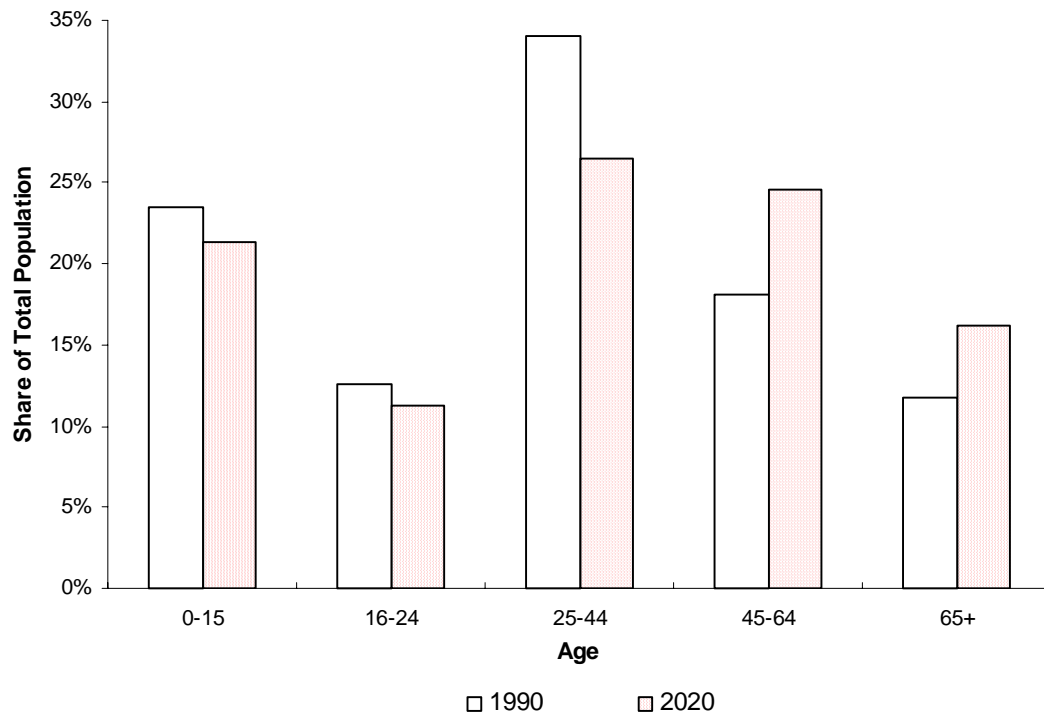
Figure 1-6
Aging of Population: Washington

Table 1-1

Components of Population Change: 1980 – 2020

Period	Population End of Period	Population Change Number	Population Change %	Births Number	Births Rate *	Deaths Number	Deaths Rate *	Natural Increase	Net Migration Number	Net Migration Rate *
1980-1981	4,229,300	96,900	2.30	68,200	16.30	31,800	7.60	36,300	60,600	14.50
1981-1982	4,276,500	47,300	1.12	70,100	16.48	31,700	7.45	38,300	8,900	2.09
1982-1983	4,307,200	30,700	0.72	69,500	16.19	32,500	7.57	36,900	-6,200	-1.44
1983-1984	4,354,100	46,800	1.09	68,500	15.82	33,200	7.67	35,200	11,600	2.68
1984-1985	4,415,800	61,700	1.42	69,100	15.76	34,000	7.75	35,100	26,600	6.07
1985-1986	4,462,200	46,400	1.05	70,200	15.81	34,000	7.66	36,200	10,200	2.30
1986-1987	4,527,100	64,900	1.45	69,300	15.42	34,400	7.65	34,900	30,000	6.67
1987-1988	4,616,900	89,800	1.98	71,000	15.53	36,000	7.87	35,000	54,800	11.99
1988-1989	4,728,100	111,200	2.41	73,000	15.62	36,000	7.70	37,000	74,200	15.88
1989-1990	4,866,700	138,600	2.93	76,400	15.93	36,200	7.55	40,100	98,500	20.53
1990-1991	5,015,300	148,600	3.05	79,100	16.00	36,600	7.40	42,500	106,100	21.47
1991-1992	5,143,600	128,300	2.56	80,200	15.80	37,200	7.32	43,000	85,200	16.77
1992-1993	5,281,600	138,100	2.68	79,100	15.17	39,400	7.55	39,700	98,300	18.86
1993-1994	5,384,100	102,500	1.94	78,200	14.66	39,500	7.41	38,700	63,800	11.97
1994-1995	5,489,100	105,000	1.95	77,500	14.25	40,000	7.35	37,500	67,500	12.41
1995-1996	5,584,300	95,200	1.74	77,000	13.91	41,200	7.43	35,800	59,400	10.73
1996-1997	5,683,300	98,900	1.77	78,000	13.85	42,600	7.57	35,400	63,500	11.28
1997-1998	5,768,500	85,200	1.50	78,800	13.77	41,600	7.26	37,200	48,000	8.38
1998-2000	5,846,400	77,900	1.35	79,800	13.73	43,100	7.43	36,700	41,300	7.11
2000-2000	5,894,100	47,700	0.82	79,500	13.55	44,000	7.50	35,500	12,200	2.08
2000-2001	5,952,700	58,600	0.99	79,900	13.49	45,000	7.59	34,900	23,700	4.00
2001-2002	6,016,000	63,200	1.06	80,300	13.42	45,700	7.63	34,600	28,600	4.77
2002-2003	6,083,900	67,900	1.13	81,000	13.39	46,200	7.63	34,800	33,100	5.47
2003-2004	6,157,900	74,000	1.22	81,900	13.38	46,900	7.66	35,000	39,000	6.37
2004-2005	6,237,200	79,300	1.29	83,000	13.39	47,700	7.69	35,300	44,000	7.10
2005-2006	6,319,500	82,300	1.32	84,200	13.40	48,400	7.70	35,800	46,500	7.41
2006-2007	6,404,100	84,600	1.34	85,500	13.45	49,100	7.72	36,400	48,100	7.56
2007-2008	6,489,500	85,400	1.33	87,100	13.51	49,800	7.73	37,300	48,100	7.46
2008-2009	6,575,800	86,400	1.33	88,800	13.59	50,500	7.73	38,300	48,100	7.36
2009-2010	6,663,100	87,300	1.33	90,500	13.66	51,300	7.74	39,200	48,100	7.27
2010-2011	6,751,200	88,000	1.32	92,000	13.72	52,100	7.77	39,900	48,100	7.17
2011-2012	6,840,000	88,800	1.32	93,600	13.78	52,900	7.79	40,700	48,100	7.08
2012-2013	6,929,500	89,500	1.31	95,200	13.83	53,800	7.81	41,400	48,100	6.99
2013-2014	7,019,600	90,100	1.30	96,700	13.86	54,700	7.84	42,000	48,100	6.90
2014-2015	7,109,900	90,300	1.29	97,800	13.84	55,600	7.87	42,200	48,100	6.81
2015-2016	7,200,100	90,200	1.27	98,700	13.80	56,600	7.91	42,100	48,100	6.72
2016-2017	7,290,100	90,000	1.25	99,500	13.73	57,600	7.95	41,900	48,100	6.64
2017-2018	7,379,900	89,700	1.23	100,300	13.67	58,600	7.99	41,700	48,100	6.56
2018-2019	7,469,200	89,300	1.21	101,000	13.60	59,800	8.05	41,200	48,100	6.48
2019-2020	7,557,800	88,700	1.19	101,500	13.51	60,900	8.11	40,600	48,100	6.40
1980-1990		734,300		705,300		339,800		365,000	369,200	
1990-2000		1,027,400		787,200		405,200		382,000	645,300	
2000-2010		769,000		842,200		480,600		361,600	407,300	
2010-2020		894,600		976,300		562,600		413,700	481,000	
1995-2020		*2,068,500*		*2,211,600*		*1,255,700*		*955,900*	*1,112,700*	

* Rates are calculated per 1,000-midpoint population.

SOURCES: <u>Forecasts of the State Population: January 2001 Revised,</u> Office of Financial Management, January 2001.

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